

Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

Claims 1-21 (canceled).

22. (previously presented) A method for growing at least one layer of III-V alloy semiconductor on a semiconductor substrate, and including at least nitrogen and arsenic simultaneously, comprising: forming said alloy semiconductor by an MOCVD method at a pressure of at least that of conventional low pressure MOCVD, using a nitrogen containing organic compound as a source material for nitrogen, wherein said nitrogen containing organic compound is selected from the group consisting of monomethylhydrazine, dimethylhydrazine and tertiary butyl amine, and using a source material for arsenic, wherein said III-V alloy semiconductor comprises at least Ga, In, N, and As.

Claims 23-37 (canceled).

38. (amended) The method according to [any one of claims 1, 5, 10, 13, 16, 19, 22, 24, 29, 30, 31, 32, 33, 34, 35, 36, and 37] claim 22, comprising the use of a horizontal type MOCVD apparatus to carry out said MOCVD method.

Claims 39-59 (canceled).

60. (new) The method according to claim 22, wherein said semiconductor substrate comprises GaAs.

61. (new) The method according to claim 22, wherein said nitrogen containing organic compound is selected from the group consisting of dimethylhydrazine and tertiary butyl amine.

62. (new) The method according to claim 22, further comprising controlling conductive properties of, and carrier concentrations in said alloy semiconductor by adding a dopant, wherein said dopant is selected from the group consisting of beryllium, magnesium, zinc, carbon, silicon, germanium, tin, sulfur, tellurium, and selenium.

63. (new) A semiconductor device fabricated by the method of claim 22.

64. (new) A method for growing at least one layer of III-V alloy semiconductor on a semiconductor substrate, and including at least nitrogen and arsenic simultaneously, comprising:
forming said alloy semiconductor by an MOCVD method under specified conditions of at least one of temperatures and pressures;

using a nitrogen containing organic compound as a source material for nitrogen; and

using a source material for arsenic,

wherein said nitrogen containing organic compound is selected from the group consisting of monomethylhydrazine, dimethylhydrazine and tertiary butyl amine, and

wherein a horizontal type MOCVD apparatus is used to carry out said MOCVD method.

65. (new) The method according to claim 64, wherein the specified conditions comprise forming said alloy semiconductor at a pressure of at least that of conventional low pressure MOCVD.

66. (new) The method according to claim 64, wherein said semiconductors substrate comprises GaAs.

67. (new) The method according to claim 64, wherein said nitrogen containing organic compound is selected from the group consisting of dimethylhydrazine and tertiary butyl amine.

68. (new) The method according to claim 64, further comprising controlling conductive properties of, and carrier concentrations in said alloy semiconductor by adding a dopant, wherein said dopant is selected from the group consisting of beryllium, magnesium, zinc, carbon, silicon, germanium, tin, sulfur, tellurium, and selenium.

69. (new) A semiconductor device fabricated by the method of claim 64.